Rugged Laptop

RS13

User's Guide

BC

Revision History

Revision	Date	Changes	Author
1.0.9	2025/07/09	Update Battery Shut Down Mode info. Update Specifications info.: Memory, Storage, Environmental Specifications, Certifications	Annabelle Wu
1.0.8	2024/02/27	Add Managing Power info.: Shut Down Mode feature Update Battery Pack info.: Shut Down Mode feature Update BVA & Surge Protector Module info.	Annabelle Wu
1.0.7	2023/08/24	Correct e-RMA info.: MilDef Crete's Website Update Specifications info.: Certifications	Annabelle Wu
1.0.6	2023/06/27	Update Trademark info. Add Unpacking info. Change "BT" to "Bluetooth®"	Annabelle Wu
1.0.5	2023/01/05	Correct Specifications—Materials and Recycling info	Annabelle Wu
1.0.4	2022/05/23	Update Specifications—Certifications Add UKCA info	Patricia Huang
1.0.3	2022/03/31	Update Memory MHz info	Patricia Huang
1.0.2	2021/05/04	Correct Charging the Battery info	Patricia Huang
1.0.1	2021/04/09	Update CE/ FCC info	Patricia Huang

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Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

RF exposure warming

This equipment must be installed and operated in accordance with provided instructions and antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

Regulatory Information/ Disclaimers

Installation and use of this computer must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment.

The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution of the connecting cables and equipment other than manufacturer specified. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failing to comply with these guidelines.

Federal Communications Commission regulatory compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC 47 CFR Part 15 Subpart B
FCC 47 CFR Part 15 Subpart C
FCC 47 CFR Part 15 Subpart E

Note:
This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Important:
Changes or modifications to this product not authorized by MilDef could void the electromagnetic compatibility (EMC) and wireless compliance and negate your authority to operate the product.
In order to maintain compliance with FCC regulations, compliant peripheral devices and shielded cables must be used with this equipment.

EU Declaration of Conformity

CE

The device is hereby confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility Directive (2014/30/EU), Radio Equipment Directive (2014/53/EU) and Low Voltage Directive (2014/35/EU), if used for its intended use and that the following standards have been applied:

1. **Health**
   Applied Standard(s):
   EN 62311 (2008)

2. **Safety**
   Applied Standard(s):
   EN 62368-1:2014/A11:2017

3. **Radio frequency spectrum usage**
   Applied Standard(s):
   EN 300 328 V2.1.1 : 2016
   EN 303 413 V1.1.1 : 2017
   EN 301 893 V2.1.1 : 2017

4. **Electromagnetic Compatibility Directive**
   Applied Standard(s):
   EN 55032 Class B (2015)
   EN 61000-3-2 (2018)
   EN 61000-3-3 (2013/A1:2017)
   EN 55024 (2010/A1:2015)
   EN 61000-4-2 (2009)
   EN 61000-4-3 (2006+A2:2010)
   EN 61000-4-4 (2012)
   EN 61000-4-5 (2014+A1:2017)
   EN 61000-4-6 (2014)
   EN 61000-4-8 (2010)
   EN 61000-4-11 (2004/A1:2017)
   EN 301 489-1 : V2.2.1 (2019)
   EN 301 489-17 : V3.2.0 (2017)
   EN 301 489-19 : V2.1.1 (2019)

UKCA Declaration of Conformity

The device is hereby confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility Directive 2016, Radio Equipment Directive 2017 and UKCA-Electrical Equipment (Safety) Regulation 2016, if used for its intended use and that the following standards have been applied:

1. **Safety**
   Applied Standard(s):
   BS EN 62368-1:2020+A11:2020

2. **Health**
   Applied Standard(s):
   BS EN 62311:2020

3. **Radio Frequency Spectrum Usage**
   Applied Standard(s):
   ETSI EN 300 328 V2.2.2 : 2019-07
   ETSI EN 301 893 V2.1.1 : 2017-05
   ETSI EN 300 413 V1.1.1 : 2017-06

4. **Electromagnetic Compatibility Directive**
   Applied Standard(s):
   BS EN 55032 Class B (2015/A1:2020)
   IEC 61000-3-2 Ed.5.1 (2018+A1:2020)
   IEC 61000-3-3 Ed.3.1 (2017)
   BS EN 55035 (2017/A11:2020)
   ETSI EN 301 489-1 V2.2.3 (2019-11)
   ETSI EN 301 489-17 V3.2.4 (2020-09)
   ETSI EN 301 489-19 V2.1.1 (2019-04)

Power Conservation

This computer consumes less power compared to conventional consumer computers. The power consumption may be further reduced by properly configuring the Power Management Setup.

It is recommended that the power saving features be enabled even when not running on battery power. Power Management features can conserve power without degrading system performance.

Power Safety

There are specific power requirements for your computer:

- Only use an approved AC adapter designed for this computer.
- There is a 3-prong grounded plug for the AC adapter. The 3rd prong is an important mechanism for ensuring product safety. Please do not neglect the importance of this mechanism. If you are unable to access a compatible outlet, please hire a qualified electrician to install a compatible outlet for you.
- When unplugging the AC power cord, please make sure to disconnect the cord by pulling from the plug head instead of pulling from the wire to prevent wire damage.
- Make sure the power outlet and any other extension cord(s) you use can support the total current load of all the connected devices.
- Before cleaning the computer, please make sure it is disconnected from any external power source.

Warning

Before any upgrade procedures, make sure the power is turned off, and all the cables are disconnected. Also, it is advisable to remove your battery to prevent your computer from accidentally turning on.

Battery Preservation

Precaution

- Only use batteries designed for this computer. Using incompatible battery types may cause explosion, leakage or damage to the computer.
- Do not store your battery in high moisture condition, low temperature or high temperature. Proper storage temperature is 5~20°C and capacity is suggested to remain 50%.
- Do not put your computer and battery near any heat source(oven, stove…).
- Do not remove the battery from the computer while the computer is powered on.
- Do not continuously use a battery that has been dropped, or that appears damaged (e.g. bent or twisted) in any way. Even if the computer is able to continuously work with a damaged battery, the circuit damage may occur and possibly cause fire.
- Always use the charger designed for this computer to recharge the battery. Incorrect recharging may cause the battery to explode.
- Do not try to service a battery by yourself. For battery service or replacement, please contact your service representatives.
- Please dispose of damaged battery promptly and carefully. Explosion or leakage may occur, if the battery is exposed to fire, improperly handled or discarded.
- If the battery will not be used for a long period, please charge the battery to 50% and remove AC adapter. If the battery is stored in a system, it should be recharged to 50 every 3 months. If the battery is stored solely, it should be recharged every 6 months. This could prevent the battery from being over discharge and damaged.
- If your system always connects the AC power supply, the battery should be discharged to 50% every two weeks.

Battery Capacity Decline

The capacity of a Li-ion battery decreases over time due to it's chemistry features.

Normal Li-ion battery can be fully charged and discharged 300~500 cycles. A

battery which is properly used in room temperature (25℃) can be charged and discharged about 300 times (or a year) before its capacity gradually decrease to 80%.

The decrease rate of battery capacity depends on factors including system design, model number, power consumption, software program and system power management. With extreme temperature or abusing the battery might lose 70% of its capacity in a relatively short time.

Battery protection

If a battery keeps being charged with high voltage, the cell would age faster. To prevent this, once the battery is charged to 100%, the system will not keep charging it and the capacity might decrease and remain between 90~100%.

Notice:

For safety, recharging will stop if the internal temperature of the battery is out of range(<0°C; >50°C), while discharging stops if the internal temperature of the battery is detected over 65°C. Please note that recharging could have stopped before the ambient temperature reaching these boundaries because the internal temperature of the battery does not equal to the ambient temperature.

Battery Disposal & Caution

The product that you have purchased contains a rechargeable battery. The battery is recyclable. At the end of its service life, under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal. Danger of explosion may possibly occur, if the battery is incorrectly replaced. Replace only with the same or the equivalent battery recommended by the manufacturer. Discard the used battery according to the manufacturer's instructions.

Environmental Information, Material Safety & Recycling

All materials used in the manufacturing of this equipment are recyclable or environmentally friendly. Please recycle the packing materials in accordance with local regulations at the end of the product's service life.

Notice:

- The equipment may contain insignificant amount of hazardous substances for health and environment below control level.
- To avoid spreading such substances into the eco system and to minimize the pressure on the natural environment, you are encouraged to reuse or recycle most of the materials in a safe way after an end of the product life.
- For more information on collection, reuse and recycle of materials, please consult local or regional waste administrations for more information. You can also contact your dealer for more information on the environmental details of the equipment.
- The symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Please check local regulations for disposal of electronic products.

TABLE OF CONTENTS

TABLE OF CONTENTS 11

CHAPTER ONE - GETTING STARTED 1

UNPACKING 1
QUICK OPERATION 2
APPEARANCE OVERVIEW 3

CHAPTER TWO - OPERATING INFORMATION 6

WORKPLACE 6
RUGGEDNESS 6
OPERATING SYSTEM 7
WORK WITH POWER BUTTON 7
BOOT UP AND POST 8
SHUT DOWN 8
SLEEP/HIBERNATE 9
KEYBOARD 10
LED INDICATORS 11
SOLID STATE DRIVE (SSD) 11
RTC 11
SYSTEM MANAGER 12
USE KENSINGTON LOCK SLOT 14

CHAPTER THREE - MANAGING POWER 15

AC ADAPTER 15
BATTERY 16
Battery Shut Down Mode 17
BATTERY RECALIBRATION 19
POWER CONSERVATION 20
SUPPORTING ACPI 20

CHAPTER FOUR - BIOS SETUP 21

MAIN MENU 21
ADVANCED MENU 22
CPU Configuration Sub-Menu 24
PCH-FW Configuration Sub-Menu 24
Intel® I210 Gigabit Network Connection Sub-Menu 25
Intel® Ethernet Connection I219-LM Sub-Menu 25
Trusted Computing Sub-Menu 26
RF Device Control Sub-Menu 26
EC Thermal Control Sub-Menu 27

AC In Boot Control Sub-Menu 27
USB Power Control Sub-Menu 28
Battery Recalibration Sub-Menu 28
IT8760 Super IO Configuration Sub-Menu 29
Intel® Bios GuardTechnology Sub-Menu 29
Network Stack Configuration Sub-Menu 30
CSM Configuration Sub-Menu 30
CHIPSET MENU 31
PCH-IO Configuration Sub-Menu 31
SECURITY MENU 32
HDD Security Configuration Sub-Menu 32
Secure Boot Sub-Menu 34
BOOT MENU 35
SAVE & EXIT MENU 36

CHAPTER FIVE - DRIVERS AND APPLICATIONS 37

CHAPTER SIX - SPECIFICATIONS 38
PLATFORM 38
PROCESSOR 38
MEMORY 38
GRAPHICS 38
DISPLAY 38
STORAGE 38
KEYBOARD 39
TOUCHPAD 39
I/O PORTS 39
POWER 40
ENVIRONMENTAL SPECIFICATIONS 40
CERTIFICATIONS 41
SYSTEM UNIT DIMENSIONS AND WEIGHT 41
MATERIALS AND RECYCLING 41

CHAPTER SEVEN - OPTIONAL DEVICES 42
COMMUNICATION 42
SURGE PROTECTOR/ BVA MODULE 42
VEHICLE ADAPTER 43
TRUST PLATFORM MODULE (TPM) 43
DOCKUNDER DURS 44

CHAPTER EIGHT - MAINTENANCE AND SERVICE 45
CLEANING 45
TROUBLESHOOTING 45
RMA SERVICE & E-RMA 46

Chapter One - Getting Started

Unpacking

Caution:

- *Fully charge the battery before using it for the first time.*

The following components are along with your computer. If there is any missing or damaged, please notify the dealer immediately.

- Computer Unit
- Removable HDD (Hard Disk Drive)
- Removable ODD (Optical Disk Drive)
- AC Adapter
- AC Power Cord
- Utility DVD
- Quick Guide
- Carrying Bag

Quick Operation

- Loosen the battery screw, remove the battery insulation sheet, and mount the battery.
- Connect the AC adapter with the computer and start charging the battery for at least 10 minutes.
- Turn ON the computer by pressing the power switch.

Notice:

- When ambient temperature is under +5℃ (This is the default setting for this computer.), the system may not boot up immediately. System will beep with LED heater light flashing to remind the user while heater working. Also, the frequency of the LED will become faster to remind the user while the temperature is approaching to be suitable. After 5~15 minutes, the system will boot up automatically.
- Under an emergency situation, it is able to skip heating for booting up the system immediately by pressing the power switch for >9 seconds. The speaker will also beep with a special sound. (It is not guaranteed all devices on the computer are possible to work properly.)
- Press the power switch again during the heating process will shut down the computer.
- Driver or application installation may be necessary for further operation.
- The following procedures will help to Turn OFF the computer:
  1. Press power switch to "**Shut Down**", "**Sleep**"* or "**Hibernate**"* depending on operating system (OS) and power management settings.
  2. Press power switch for 4 seconds for a "Hard" power off. But, note that the system will shut down immediately without saving any data or parameters.
  3. Click **Start** → **Shut Down** in Windows to Turn OFF.

Note:

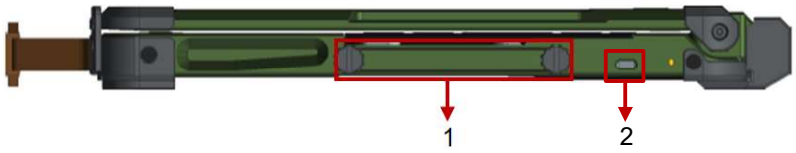
➢ *Some operating systems may not support the above-mentioned functions.*

Appearance Overview

Display and Base

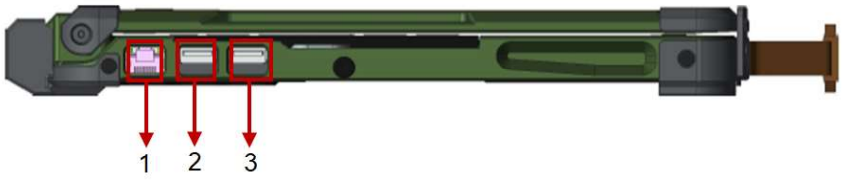
1. Embedded Antennas (Optional):
   GPS, WLAN/Bluetooth® x 2
2. Embedded Mic
3. LED Indicators (Refer Section F for details)
4. Power Button
5. Touchpad
6. Left-click and Right-click

Right



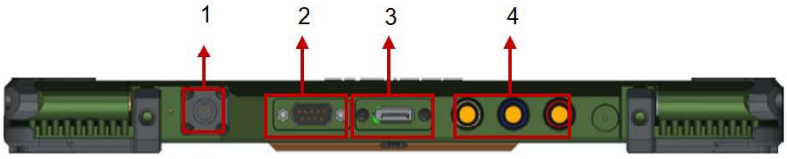
1. SATAIII SSD
2. Kensington Lock Slot

Left



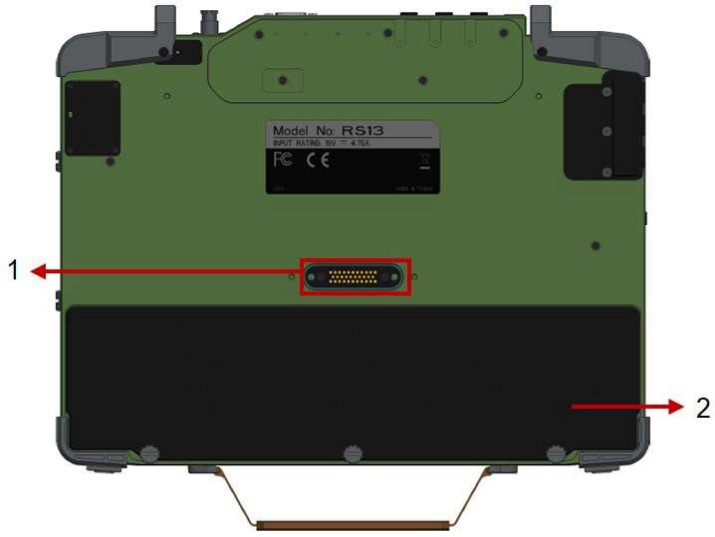
3. GLAN (RJ45)
4. USB 3.1 Gen 1 x 1
5. USB 3.1 Gen 1 x 1 (Support 1.5A Fast Charge)

Rear



1. DC Jack
2. Serial port DB9
3. Display port
4. Optional Fischer I/O:
   (6 optional signals for 3 connectors, non-repeatable)
   USB 2.0 x 1
   VGA x 1
   COM x 2 (RS232 or RS422)
   GLAN x 1
   Audio x 1

Bottom View



1. D/U port
2. Battery

Chapter Two - Operating Information

Workplace

A clean and moisture-free environment is preferred. Make room for air circulation. Remember to avoid areas from:

- Sudden or extreme changes in temperature.
- Extreme heat.
- Strong electromagnetic fields (near television set, motor rotation area, etc.).
- Dust or high humidity.

If it is necessary to work in a hostile environment, please regularly maintain your notebook computer by cleaning dust, water, and etc. to keep it in an optimal condition.

Ruggedness

This notebook computer is designed with rugged features such as vibration, shock, dust, and rain/ water protection. However, it is still necessary to provide appropriate protection while operating in harsh environments.

The notebook computer is also designed to withstand rainfall from top with mild wind blowing only. Please keep the keyboard facing up, i.e. normal operating direction, to maintain water resistance. NEVER immerse the unit in water, or spray water at an upside-down system. Doing so may cause permanent damage.

The D-sub connector caps on the rear of the computer are for dust and shock protection. The connectors are sealed internally. Other I/O ports and devices on the left or right must have caps tightly closed or cable inlets sealed while being exposed to water or dust.

There are optional gaskets for DB-9 and DB-25 connectors. You may install them to improve rain/ dust/ moisture resistance on your commercial type cable. Insert the packing into the male connector (with pins) and fasten the screws.

All connectors will be corroded if being exposed to water or moisture. Corrosion is accelerated if the power is ON. Please take proper water-resistant measures for cable connections. The DC jack and cables are sealed and may be operated with water splashing while attached. All port covers should be in place when no cable is attached.

Operating System

Your computer is designed to operate with Microsoft Windows 10 64-bit Operating System. Please connect your computer with an external USB-interface drive, such as a USB thumb drive, and start the OS installation.

Work with Power Button

Always turn on your device by using the power button. Press the power button about 2 seconds and the laptop will boot up. The device is equipped with a heater kit to enable work under low temperature. The heater will heat up the LCD to the temperature for booting up the system. Also, the heater will constantly monitor LCD temperature. Once the temperature becomes lower, the heater will heat up again to maintain the temperature for operation.

Note:

- When ambient temperature is under -15 °C (the default setting for your tablet computer), the system may not boot up immediately. System will beep with Heater LED light flashing orange to indicate that the heater is in operation. After 3~10 minutes (depending on the ambient temperature), the system will boot up automatically.
- In emergency situations, you can skip the heating process by pressing and holding the power button for 9~11 seconds then release. The speaker will beep with a special sound to signify that the heating process has been skipped (Please note that not all devices are guaranteed to work properly in this case).
- Press the power button again during the heating process will shut down the computer.

The following is a list of functions associated with your tablet computer's power button:

1. Press and hold for 9 ~ 11 seconds:
   The system will skip heating process and force boot up.
2. Press and hold for 5 ~ 8 seconds:
   Enable/Disable the sound of Heater.
3. Press and hold for 4 seconds under OS:
   Shut down the system.
4. Press and hold for 2 seconds:
   Boot up the system.
5. Press the power button for functions including:
   a. Power on the system.
   b. Force Shut Down.
   c. Sleep/Hibernate (Dependent on OS settings).

Boot Up and POST

Boot up

The computer turns ON and loads the operating system (such as Windows) into the system memory. This start-up procedure is called “boot up”.

The ROM BIOS Power on Self-Test (POST)

Each time the computer powers on, it automatically performs a self-test of its memory and hardware devices.

Note:

When the device is boot at low temperature(<5℃) the system will have an additional stage (about 10 seconds) during POST to warm up and make sure all components work correct.

Shut down

Before shutting down, please always remember to save the unfinished works and close the application for preventing from any possible data loss or HDD damage.

“Shut down” will totally turn OFF the power of your notebook computer. If you want to start your notebook computer again, you need to press the power switch.

Sleep/Hibernate

Sleep

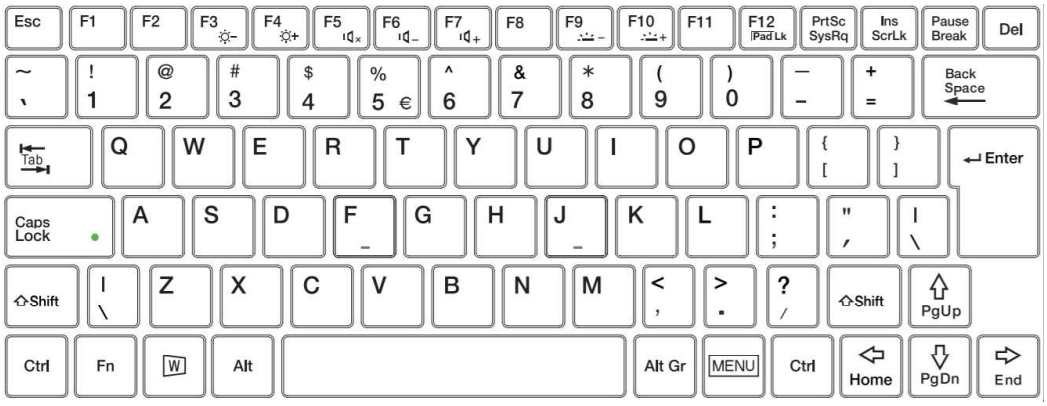
Under “Sleep” mode, the system will temporarily save your work into RAM. You are able to do enter “Sleep” mode by directly clicking from your OS. Or, you can do the “Sleep” Mode settings in your OS. If you want to start your notebook computer again, all you need to press any key.

Hibernate

Under “Hibernate” mode, the system will save your work into HDD. You are able to do enter “Hibernate” mode by directly clicking from your OS. Or, you can do the “Hibernate” Mode in your OS. If you want to start your notebook computer again, you need to press the power switch.

Keyboard

The keyboard is functionally equivalent to a full size desktop keyboard. A sample layout is shown below.


Esc F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12 PrtSc SysRq Ins ScrLk Pause Break Del
Back Space
Tab
Enter
Caps Lock
Shift
Ctrl Fn Alt Alt Gr MENU Ctrl
Home PgUp PgDn End

Function Key Combinations

Key	Description
[Fn] + [F3]	Decrease LCD brightness
[Fn] + [F4]	Increase LCD brightness
[Fn] + [F5]	Mute
[Fn] + [F6]	Volume down
[Fn] + [F7]	Volume up
[Fn] + [F9]	Decrease keyboard LED Backlight brightness
[Fn] + [F10]	Increase keyboard LED Backlight brightness
[Fn] + [F12]	Touchpad Lock/Unlock

LED Indicators

Your Notebook computer is designed with LED indicators to show computer status. The description of LED indicators and colors are provided for your operational reference.

LED Indicator	Description
	Power/ S3 Indicator: Green/ Flashing Green
	SSD Indicator: Green
	Charger/ Battery Low Indicator: Orange/ Flashing Orange

Solid State Drive (SSD)

Your Notebook computer is equipped with 2.5" SATA III Solid State Drive (SSD) for data storage. It is user removable and provids convenience and security. It can **ONLY** be removed while power is **OFF**.

> ***Note:***
> *NEVER drop your SSD or expose them to high temperature, high humidity, or any hazardous environment. NEVER try to disassemble the module. Static discharge may destroy your device and data. Always pick up the modules by touching the case only.*

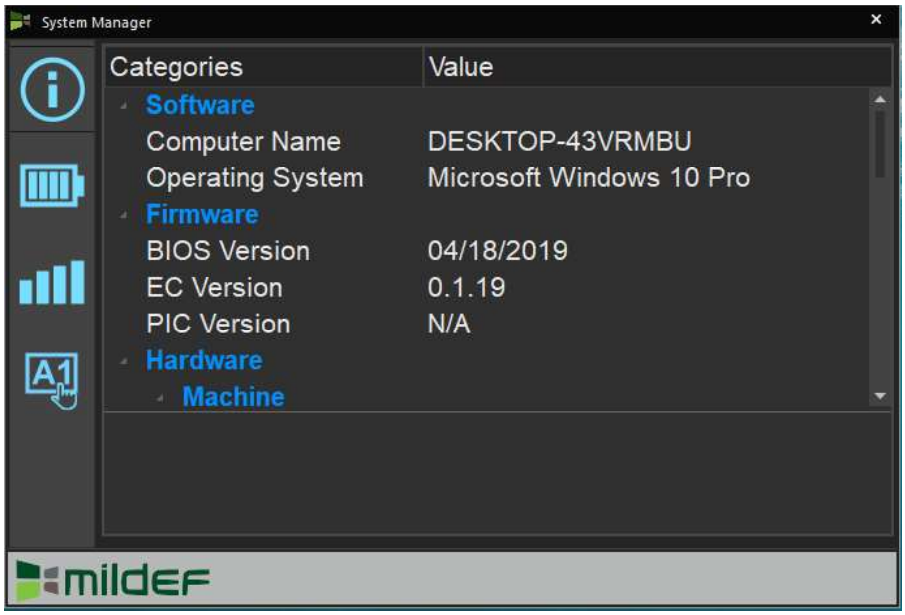
RTC

Battery backed up RTC (Real Time Clock/Calendar) is built in an on-board CMOS (Complementary Metal Oxide Semiconductor) chip. The RTC keeps track of the time and date while the computer is off. The CMOS chip also stores system setup information.

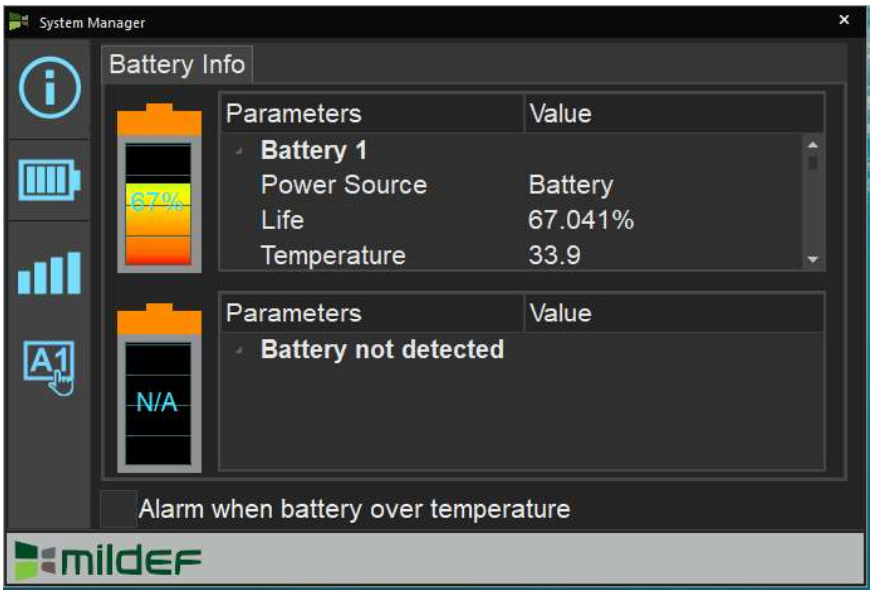
System Manager

System Manager is an app which allows user to access information(System, battery),and set RF device, function keys easily.

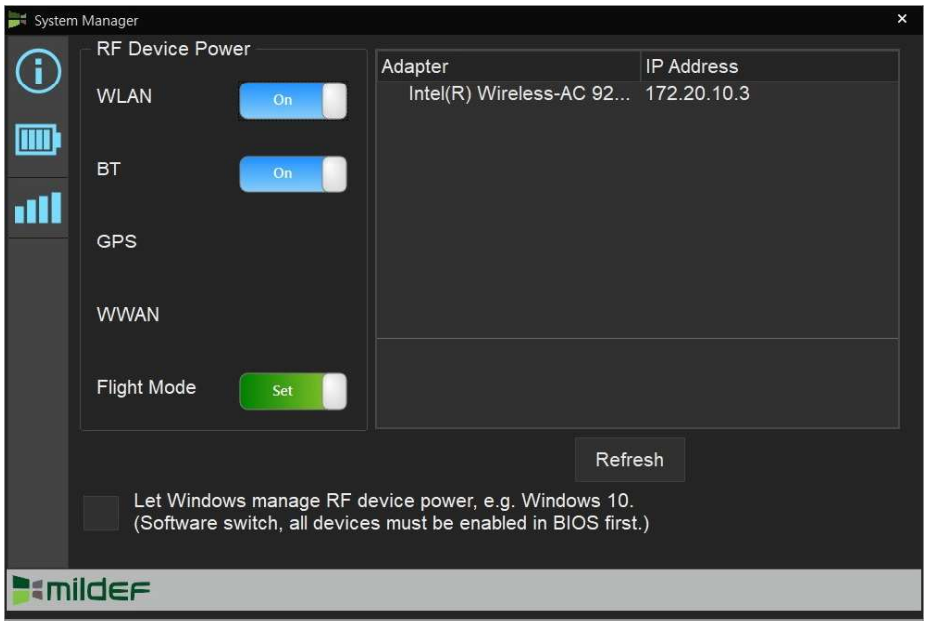
1. System information:



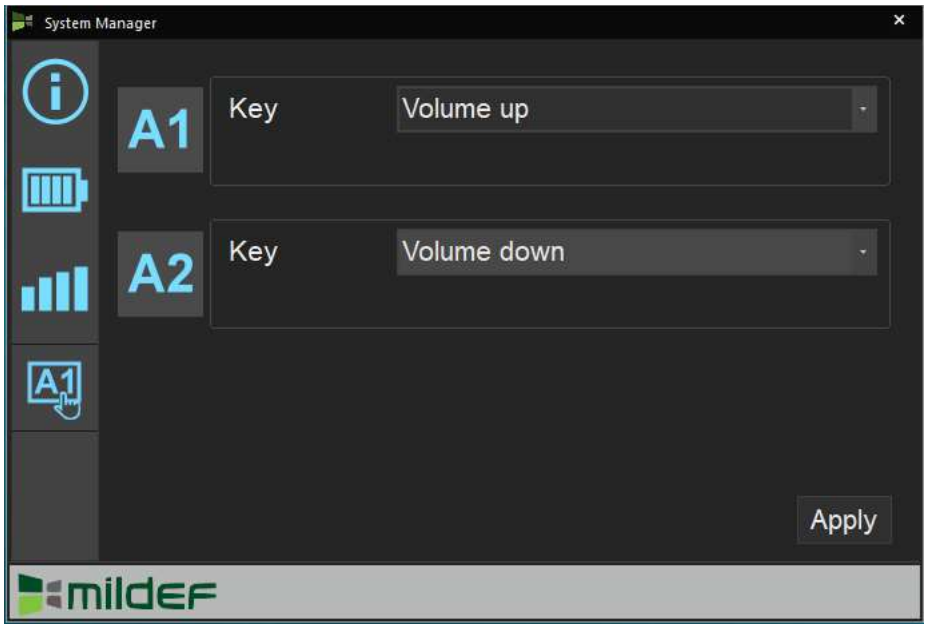
2. Battery information:



3. RF Device control panel:



4. Function key control panel.



Available Function Items List

None
Open/ Execute a selected file
Open URL in default browser
Change display output
Brightness up
Brightness down
Volume up
Volume down
Volume mute
Launch on-screen keyboard
Launch Windows Mobility Center
Launch File Explorer

Note:

- *"System manager" is a universal app so some pages may be different according to your system. For example, function key setting page will be unavailable for those divice without function key.*

Use Kensington Lock Slot

Loop the lock cable around a stationary object such as a table and plug the Kensington Lock into the Kensington Lock Slot to lock it.

Note:

- *Kensington Lock is a widely available 3rd party product.*

Chapter Three - Managing Power

AC Adapter

The AC adapter performs two functions:

- It powers the computer from an external AC source.
- It charges the computer battery.

The adapter automatically detects the AC line voltage (100V or 240V) and adjusts accordingly.

The following are recommended when using the AC adapter:

- Use a properly grounded AC outlet.
- Use one AC outlet exclusively for the computer. Having other appliances on the same line may cause interference.

Connecting the AC adapter:

- Plug the AC cord to the adapter.
- Plug the other end of the AC cord into the wall outlet. Make sure the green LED on the adapter turns on.
- Attach the DC plug into the power jack of the computer; and turn the lock ring clockwise to secure it.

AC Adapter Indicator:

The green LED indicates that AC power is ready.

Battery

The power source will automatically switch to battery when the external power source (AC adapter or optional vehicle adapter) is disconnected.

Battery Low

When the battery is nearly exhausted, the computer gives the following “Battery Low” warnings:

- Windows battery low warning (when operating system is Windows).
- The power LED flashes.

Once the Battery Low warning occurs, please:

- Save and close the files you are currently working on.
- Plug in the AC adapter to recharge the battery.

Charging the Battery

Plug in the AC adapter (or optional vehicle adapter) to start the battery charging. LED Indicator turns ON when the battery is charging and turns OFF when the battery charging is completed. If the battery is already full, the sense circuitry will stop high current charge within several minutes.

Battery Shut Down Mode

The battery is designed with Shutdown Mode and it will automatically enter this mode to prolong its storage time and to avoid itself from over-discharging. Shutdown Mode will be activated:

- When the battery itself is not in use for over 45 days

The battery in Shutdown Mode may be sustained for approximately 180 days. To deactivate Shutdown Mode, please connect battery to the handheld and then to the AC Adapter. The charge indicator lights orange means the deactivation of Shutdown Mode has completed.

Battery Characteristics

Battery power will decrease gradually in storage. The rate depends on "self-discharge rate" and the storage environment. Self-discharge rate of rechargeable batteries is approximately 1% per day. High humidity and high temperature accelerate discharge. Very low temperature may "freeze" the battery chemicals thus decreases the capacity. The following shows some guidelines for users to maintain the battery.

1. If the battery will not be used for a long period of time, it is suggested to do the procedure every six months: discharge the battery to 0%, charge to 100%, and then discharge to 50% to store the battery. For the battery without using for more than 2 years, it may result in battery aging and is not recommended to use it.

2. About self-discharge rate, it is related to storage temperature. When store the battery in -20℃~20℃ environment, the battery may self-discharge to 0% less than one year; when in -20℃~45℃, it may self-discharge to 0% less than three month; when in -20℃~60℃, it may self-discharge to 0% less than one month.

Battery Gauge

You may check battery status from battery gauge in Windows. Click the power/battery icon to reveal the battery gauge window.

Battery Power Saving Tips

The computer comes with an intelligent power-saving feature. You may extend the battery life by:

- Setup power saving functions in Operating System Power Management options (e.g. Windows Power Options).
- Lower the intensity of the display by brightness control.
- Use standby option when computer is temporarily not in use.
- Shut down the computer when it will not be for a long-time use.

Replacing Battery

When the battery is nearly exhausted, there are two ways to keep your notebook computer working. Connecting the AC adapter and the power cord designed for this notebook computer to start charging is one method; directly replacing a charged battery designed for this notebook computer may be the other one.

Note:

➢ *Always remember to turn OFF the power before replacing the battery.*

Battery Recalibration

Battery recalibration allows a user to calibrate the GAUGE IC parameter of the battery pack. When the battery stays fully charged or in a low charge state for a long period of time, it causes the battery gauge to have some minor discrepancies. Therefore, users are recommended to carry out battery recalibration to correctly calibrate the battery GAUGE IC. To perform battery recalibration, please follow the steps as below:

1. Update BIOS & EC to the latest version xxx.xxx or later.
2. Insert the battery to the computer, and connect it to AC adapter.
3. Enter the BIOS => Choose “Advanced menu” => Choose “Battery Recalibration” => Press “Enter”.
   (See Chapter4: BIOS Setup - Advanced - Battery Recalibration Sub-Menu)
4. When “Start Battery Recalibration” pop-up appears, press “Yes” to continue.
5. The recalibration is now processing. You can see the following recalibration status on the screen:
   - Calibration Frequency: How many times the calibration is processed
   - Battery Capacity: Current battery capacity
   - Battery Charge Mode: Charge/Discharge
   - Battery Learning Mode: Normal (charge)/Learn (discharge)
6. A pop-up appears when the calibration is completed. Then click “OK”.
7. Press “Yes” to reboot the computer when “Reset Without Saving” pop-up appears.

Note:

- *Do not turn off the LCD and do not remove AC adapter during the calibration.*
- *One cycle of recalibration process indicates “Charge to Full => Start Learn Mode => Discharge => Complete Learn Mode => Charge to Full”. It will take approx. eight hours for a cycle.*
- *It requires five cycles to complete the battery recalibration. Then the recalibration will stop automatically.*
- *If you want to terminate the calibrating, simply shut down the computer by pressing Power Button or just press "CTRL+ALT+DEL" to restart.*

Power Conservation

This computer consumes much less power than conventional computers. However, power consumption may be reduced by configuring the Power Management Setup properly.

It is recommended the power saving functions to be enabled even when not running on battery power. Power Management will not degrade performance while saving power.

Supporting ACPI

Your notebook computer supports ACPI (Advanced Configuration and Power Interface) for power management. With ACPI and an ACPI-compliant operating system such as Windows, the feature will allow you to reduce the power consumption for energy saving. By supporting ACPI, the AC adapter LED and the Power indicator LED will show in different ways. The followings are the detailed description.

Sleep:
AC adapter LED is ON (while connecting with power)
Power LED indicator is ON; Other LED indicators are OFF

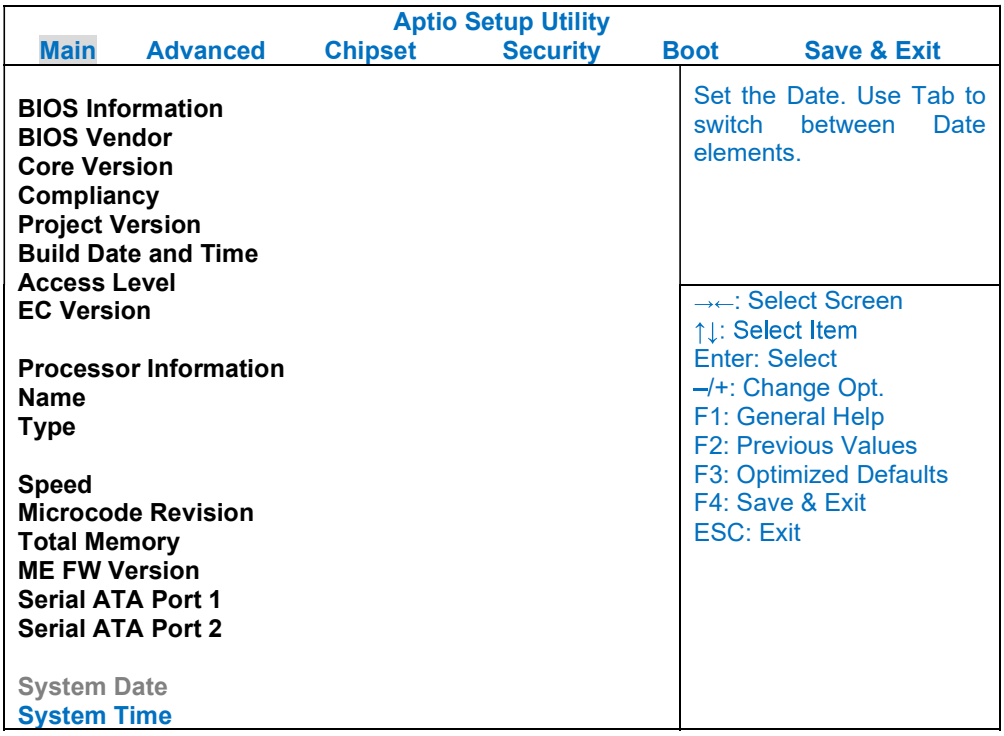
Under Hibernation:
AC adapter LED is ON (while connecting with power)
Power LED indicator is OFF; Other LED indicators are OFF

Shutdown:
AC adapter LED is ON (while connecting with power)
Power LED indicator is OFF; Other LED indicators are OFF

Chapter Four - BIOS Setup

Press **[F2]** at boot up to enter BIOS setup. Use arrow keys to select options and **[+/-]** to modify them. When finished, move to "**Exit**" and press **[Enter]** then confirm save by pressing **[Y]**.

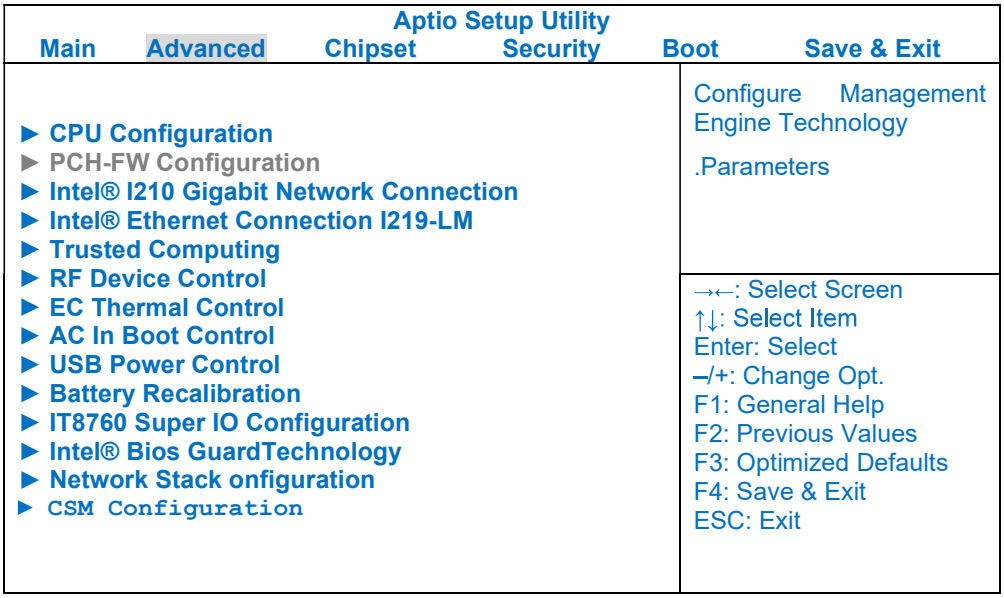
Main Menu



Note:

- *The contents may vary depending on computer configurations.*
- *Incorrect settings may cause system malfunction. To correct it, restore the Optimized Defaults with F3.*

Advanced Menu



Advanced Menu Selections

You can make the following selections on the Advanced Menu.

Feature	Options	Description
CPU Configuration	Disabled Enabled	CPU Configuration Parameters
PCH-FW Configuration	Firmware Update Configuration	Configure Management Engine Technology Parameter
Intel® I210 Gigabit Network Connection	Link Speed	Auto Negotiated 10 Mbps Half 10 Mbps Full 100 Mbps Half 100 Mbps Full
	Wake On LAN	Disabled Enabled
Intel® Ethernet Connection I219-LM	NIC Configuration	Configure the network device port.
	Blink LEDs	Identify the physical network port by blinking the associated LED
Trusted Computing	Disabled Enabled	Trusted Computing Settings
RF Device Control	Disabled Enabled	RF Device Control Setting
EC Thermal Control	55C 63C 71C 79C 87C	EC Thermal Control Setting

Feature	Options	Description
AC In Boot	Disabled Enabled	AC In Boot Setting
USB Power Control	Disabled Enabled	USB Power Mode Setting: For AC Mode Only; Setting for S5 Enable/S5 Disable
Battery Recalibration	Yes No	Start Battery recalibration function
IT8760 Super IO Configuration	Serial Port 1 Configuration	Enable / Disable Serial Port (COM)
	Serial Port 2 Configuration	Enable / Disable Serial Port (COM)
	Serial Port 3 Configuration	Enable / Disable Serial Port (COM)
	Serial Port 4 Configuration	Enable / Disable Serial Port (COM)
Intel® Bios GuardTechnology	Disabled Enabled	Enable / Disable Intel Bios Guard Support
Network Stack Configuration	Disabled Enabled	Enable / Disable UEFI Network Stack
CSM Configuration	Disabled Enabled	Enable / Disable CSM support

CPU Configuration Sub-Menu

Aptio Setup Utility Advanced		
CPU Configuration		VT-d capability
Intel (VMX) Virtualization Technology	**[Enabled]**	
VT-d	**[Enabled]**	
Intel Trusted Execution Technology	**[Enabled]**	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Turbo Mode	**[Enabled]**	

PCH-FW Configuration Sub-Menu

Aptio Setup Utility Advanced	
ME FW Version **ME Firmware Mode** **ME Firmware SKU** **AMT BIOS Features** ► **AMT Configuration** ► **Firmware Update Congiguration**	Configure Management Engine Technology Parameters →←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Intel® I210 Gigabit Network Connection Sub-Menu

Aptio Setup Utility Advanced	
► NIC Configuration Blink LEDs UEFI Driver : Adapter PBA Device Name Chip Type PCI Device ID PCI Address Link Status Mac Address Virtual MAC Address	Click to configure the network device port. →←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Intel® Ethernet Connection I219-LM Sub-Menu

Aptio Setup Utility Advanced	
► NIC Configuration Blink LEDs Port configuration information UEFI Driver : Adapter PBA : Chip Type PCI Device ID PCI Address Link Status Mac Address	Click to configure the network device port. →←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Trusted Computing Sub-Menu

Aptio Setup Utility Advanced	
Configuration **Security Device Support** **No Sercurity Device Found**	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

RF Device Control Sub-Menu

Aptio Setup Utility Advanced		
RF Device Control		RF Device Control Setting
GSM STATUS	**Not resent**	
GPS STATUS	**Present**	
GPS	**[Enabled]**	
BT STATUS	**Present**	
BT	**[Enabled]**	
WLAN STATUS	**Present**	
WLAN	**[Enabled]**	
		→←: Select Screen ↑ ↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

EC Thermal Control Sub-Menu

Aptio Setup Utility Advanced	
EC Thermal Control Thermal cooling trip point [87 C]	EC Thermal Control Setting
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

AC In Boot Control Sub-Menu

Aptio Setup Utility Advanced	
AC In Boot AC In Boot Control [Disabled]	AC In Boot Setting
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

USB Power Control Sub-Menu

Aptio Setup Utility Advanced	
USB Power Mode USB Power Control [Disabled]	USB Power Mode Setting: For AC Mode Only; Setting for S5 Enable/S5 Disable
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Battery Recalibration Sub-Menu

Aptio Setup Utility Advanced	
Battery Recalibration Utility **Calibration Frequency** **Battery Capacity** **Battery Charge Mode** **Battery Learning Mode** **Note: Only support single battery recalibration in the same time, while the Utility is executing, please don't close the LCD and don't disconnect the AC adapter. The battery recalibration will follow the steps and takes about 12hrs (by battery capacity) to complete the battery recalibration process.**	Start Battery recalibration function
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

IT8760 Super IO Configuration Sub-Menu

Aptio Setup Utility Advanced	
IT8783 Super IO Configuration **Super IO Chip** **IT8760** ►Serial Port 1 Configuration ►Serial Port 2 Configuration ►Serial Port 3 Configuration ►Serial Port 4 Configuration	Set Parameters of Serial Port →←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Intel® Bios GuardTechnology Sub-Menu

Aptio Setup Utility Advanced	
Intel Bios Guard Support [Disabled]	Enable/Disable Intel Bios Guard Support →←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

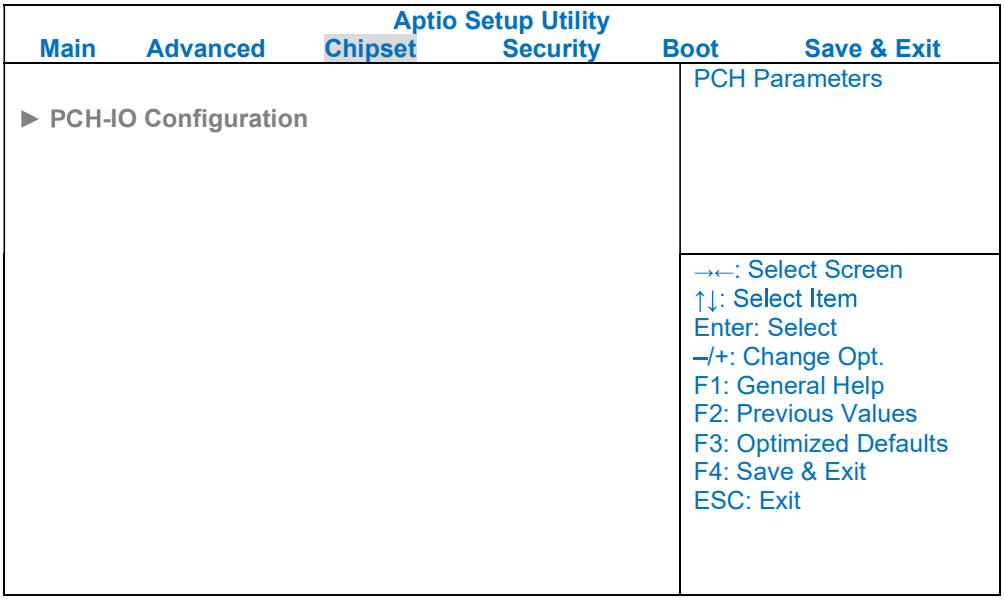
Network Stack Configuration Sub-Menu

Aptio Setup Utility Advanced	
Network Stack [Disabled]	Enable/Disable UEFI Network Stack
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

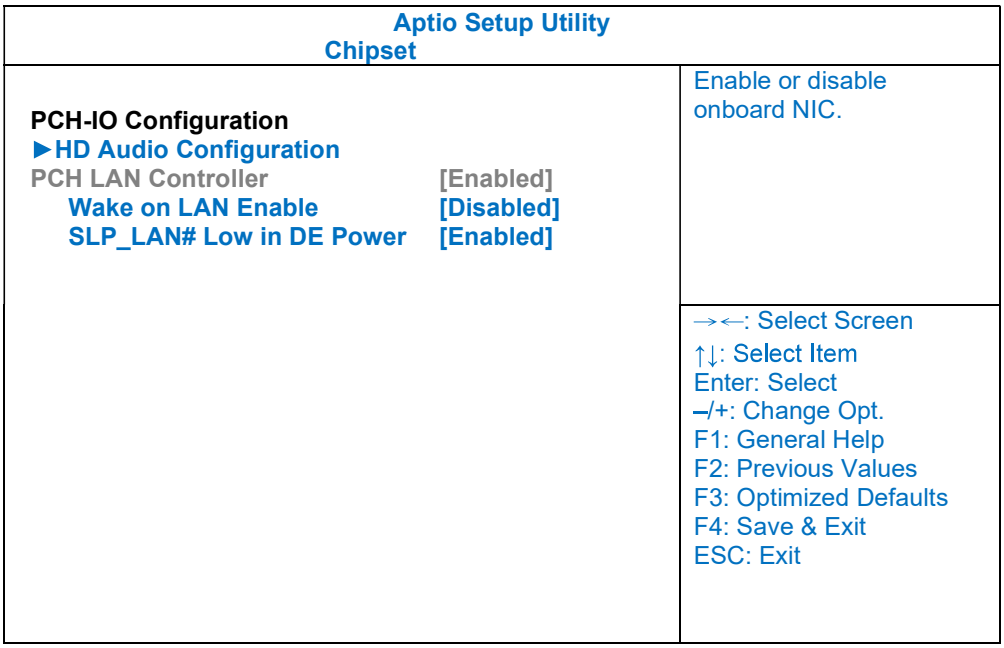
CSM Configuration Sub-Menu

Aptio Setup Utility Advanced	
Compatibility Support Module Configuration CSM Support [Disabled]	Enable/Disable CSM Support.
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Chipset Menu



PCH-IO Configuration Sub-Menu



Security Menu

Aptio Setup Utility Main Advanced Chipset Security Boot Save & Exit	
Password Description **If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.** **If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.** **The password length must be in the following range;** **Minimum length 3** **Maximum length 20** Administrator Password User Password ► Secure Boot	Set Administrator Password →←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

HDD Security Configuration Sub-Menu

Aptio Setup Utility Security	
HDD Password Description: **Allows Access to Set, Modify and Clear Hard Disk User and Master Password. User Password need to be installed for Enabling Security. Master password can be Modified only when successfully unlocked with Master Password in POST.** **HDD PASSWORD CONFIGRATION:** **Security Supported : Yes** **Security Enabled : No** **Security Locked : No** **Security Frozen : No** **HDD User Pwd Status NOT INSTALLED** **HDD Master Pwd Status INSTALLED** Set User Password Set Master Password	Set HDD User Password. ***Advisable to Power Cycle System after setting Hard Disk Passwords*** →←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Setting Password

1. Once you set HDD passwords successfully, you must enter user password to boot in the future. The master password provides an alternative entry in case the user password is lost.
2. Clearing the master password in BIOS setup will also clear the current user password. Master password is used as a backup key, it's better not to be changed frequently.
3. You can set your master password and user password with a length between 1 and 32 characters. If you want to clear current password, type nothing when creating a new password.
4. After you set a password, "Pwd Status" will change from "NOT INSTALLED" to "INSTALLED" and the "security enabled" status will change to "YES".
5. Your setting will take effect after reboot.

Note:

- *If the master password is lost or it is not set earlier than the user password, losing the user password would make accessing impossible. So please set the master password at first and keep it carefully.*

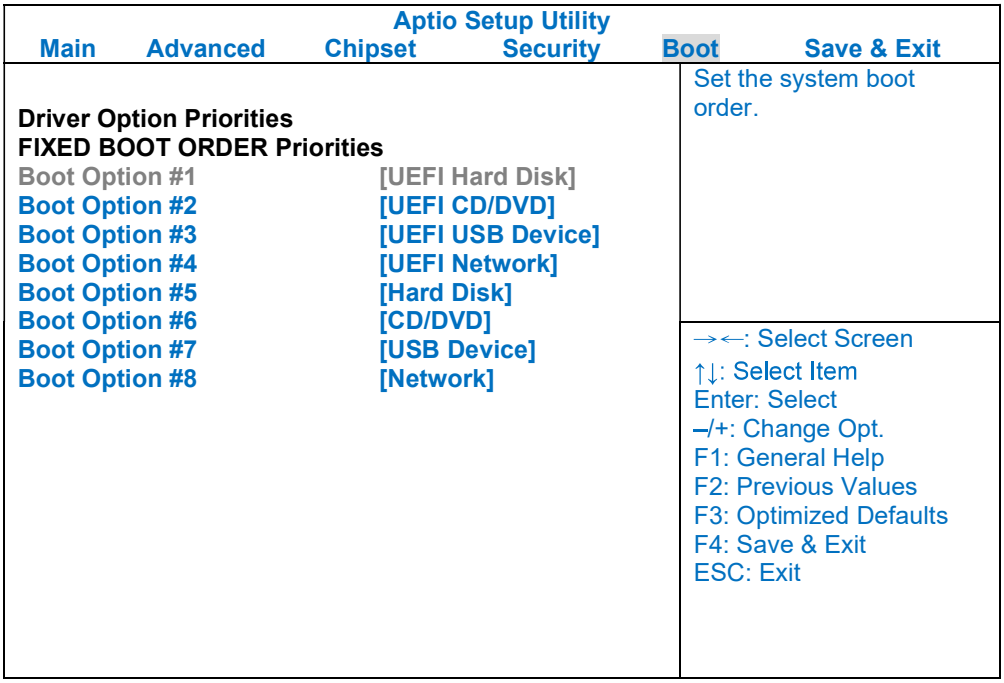
Resetting Password

1. After typing an invalid user password three times, a message will show "HDD is locked". Pressing "Enter" will leave the screen message.
2. Press "F2" immediately to enter the BIOS setup where the lost users password could be cleared with the master password.
3. Once the HDD is locked, users have no right to access. You can only enter again by the correct user password or clear it by the master password.
4. A warm boot will cause HDD Security Frozen in the selection. Only a cold boot can lift the HDD Security frozen and allow further operations in the BIOS setup. (After a cold boot, users can try to enter again with the correct user password or just reset it with the master password)

Secure Boot Sub-Menu

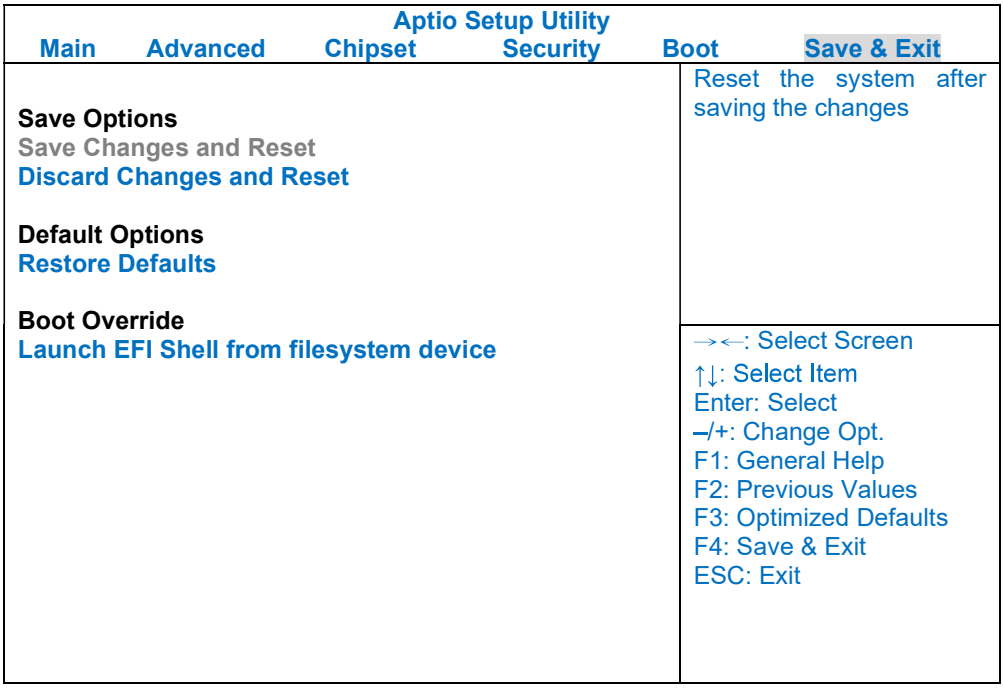
Aptio Setup Utility Security		
System Mode Vendor Keys	User Not Modified	Transition between Deployment and Uer Modes
Secure Boot	[Disabled] Not Active	
Secure Boot Customization ► Restore Factory Keys ► Reset to Setop Mode ► Enter Audit Mode ►nEnter Deployed Mode ► Key Management	[Custom]	→←: Select Screen ↑ ↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Boot Menu


Aptio Setup Utility
Main Advanced Chipset Security Boot Save & Exit
Driver Option Priorities
FIXED BOOT ORDER Priorities
Boot Option #1 [UEFI Hard Disk]
Boot Option #2 [UEFI CD/DVD]
Boot Option #3 [UEFI USB Device]
Boot Option #4 [UEFI Network]
Boot Option #5 [Hard Disk]
Boot Option #6 [CD/DVD]
Boot Option #7 [USB Device]
Boot Option #8 [Network]
Set the system boot order.
→←: Select Screen
↑↓: Select Item
Enter: Select
–/+: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

The system will try to boot from device on top then the 2nd and so on. If there is more than one device in each category, only the device on top of sub-menu can boot up.

Save & Exit Menu



Chapter Five - Drivers and Applications

The Utility DVD includes all the drivers for the installed devices in your notebook computer. Please consult the dealer if there is any driver missing. Also, through Device Manager in Windows, you are able to perform “Driver Update” or check if there are still drivers for the devices needed to be installed. Please check the readme file on Utility DVD to get the latest information before installing device drivers.

Note:

- *Please install the chipset driver first.*
- *If the system requests for reboot after installing drivers, please reboot your notebook computer first before installing other drivers.*

Chapter Six - Specifications

Platform

Intel® Kabylake-U Platform

Processor

Intel® i7-7600U (4 MB Intel Smart Cache Memory)

Memory

Max. 32GB

- 8GB/16GB/32GB
- Industrial grade
- DDR4 SO-DIMM x 1, 2400/2666MHz

Graphics

- Intel® HD Graphics 620

Display

- Standard:
  - 13.3” FHD LCD
  - Resolution: 1920 x 1080 pixels
  - Brightness (Min. ~ Typ.): 250~350 nits

- Optional:
  - Brightness (Min. ~ Typ.): 720~900 nits

Storage

- 2.5” SATAIII SSD
- 128GB/256GB/512GB/1TB
- Interface: SATAIII
- Height: 7mm
- Industrial grade

Keyboard

- Number of keys: 87 Keys (standard 87-key with backlight)
- Key Travel: 1.4 ± 0.2 (mm)
- Caps Lock LED (Green)

Touchpad

- Type: PS/2 Resistive Touchpad
- Life time: Over 5,000,000 strokes lifetime

I/O Ports

Left:

- SD Card Slot x 1*
- SIM Card Slot x 1

Std.

- GLAN RJ45 (on board Intel GLAN)
- USB 3.1 Gen.1
- USB 3.1 Gen.1**

Bottom:

- D/U port x 1***

Rear:

- DC-in Connector x 1 (Standard 2-pin; optional Military 3-pin)
- Optional DC-in 12~32V with Surge Protector
- Optional Fischer connectors x 5
  - L1: USB2.0
  - L2: VGA
  - L3: RS232 or RS422
  - L4: GLAN
  - L5: Audio

Note:

- **SD card slot supports SDHC/SDXC format.*
- ***Supports USB-IF BC V1.2 for 1.5A fast charger*
- ****The D/U will be installed under the base. Signals include: PCI-e x 1, USB3.1 x 1, USB2.0 x 1, Power (V_{bata}/1A & 5V/1A)*

Power

AC Adapter:

- AC Input: 100 -240V
- Frequency: 50/60Hz
- DC Output: 19V
- Maximum Power: 90 Watts

DC-in:

- Standard DC-in 19V
- Optional DC-in 12~32V (BVA & Surge Protector)

Battery Pack (BRSB3A):

- Type: Removable Li-ion Polymer Battery Pack
- Capacity: 11.1V/ 6040mAh
- Operating Temperature Charge: 0 ~ 45ºC
  Discharge: -20 ~ 60ºC
- Dimension: 327.4 mm (W) x 90.7 mm (D) x 15.7 mm (H)
- Weight: About 400g

Note:

- *This battery pack is designed with Shut Down Mode feature.*
- *The battery LED indicators has no function when entering SDM.*
- *For more information, please refer to Chapter 3 - Managing Power.*

Environmental Specifications

Temperature:	Operating: -20 ºC* ~ +60ºC*** (-4 ~ +131ºF)	
	Optional Operation: -30 ºC** ~ +60ºC*** (-22 ~ +131ºF)	
	Storage: -40 ºC ~ +70ºC (-40 ~ +158ºF)	
Humidity:	5~95% Non-condensing	operating
	95% maximum	storage
Altitude:	0 ~ 4,572 meters (0 ~ 15,000 feet)	operating

Note:

- *To ensure system stability, please connect your laptop to external power source when operating below 0°C and above 60°C ambient temperature.*

**Instant Cold Boot via AC Mode*
***Cold Boot via LCD Heater, AC Mode.*
****via AC Mode.*

Certifications

CE, FCC, UKCA, WEEE, REACH, RoHS, IP65, MIL-STD-810G, Optional MIL-STD-461G (G.A.), Optional MIL-STD-461G (G.N.)

Note:

- *IP65 is tested without I/O caps.*
  IP65 is not compliant when the I/O ports are attached with external connectors.

System Unit Dimensions and Weight

- Dimensions (mm): 338 (L) x265 (W) x 31.5 (H)
- Weight: 3.18 kg

Note:

- *Weight and dimensions vary depending on system configurations.*
- *Weight includes DRAM x 1, WLAN/Bluetooth® Module, GPS, battery x 1, SSD x 1, Fischer RS232, Fischer RS422*

Materials and Recycling

Materials of the computer are as follows:

- Cabinet: Aluminum Alloy, AL6061T6
- Bracket: Aluminum 5052
  Steel with Nickel Plating or Stainless Steel S304
- Cushion pad: Silicon Rubber
  TPE
- PCB: FR-4
  UL 94V0
- Battery: Rechargeable Lithium Ion, 9 Cells per Pack
- Packing: Carton - Unbleached Paper
  Cushion - Recyclable EPE
  Carrying bag - Recyclable PE Fiber
  Quick Guide - Recycled/Recyclable Paper

Please recycle the parts according to the local regulations.

Chapter Seven - Optional Devices

Communication

- **WLAN/Bluetooth®**:
  - Intel Dual Band wireless- AC 9260
  - Board Form Factor: M.2 2230 E-key Card
  - WLAN Certified: 802.11 a/b/g/n/ac
  - Bluetooth®: Supports Bluetooth® 5.0 (Backward compatible)
  - Interface: PCIe (WLAN)/USB (Bluetooth®)
- **GPS**:
  - U-blox M8N (USB interface)
- **2nd GLAN Card:**
  - Intel I210 GLAN Card
  - Mini PCIe full-size form factor

Surge Protector/ BVA Module

BVA & Surge Protector Module is designed for all equipment to directly connect with the vehicle power system. Containing the reverse polarity protection and the breaking of high voltage input, the module is able to be against high 100V at 50ms surge.

Note:

- *If you'd like to use DC-in 12V, please make sure the DC-in conn. is more than 12V, and the DC cable should withstand more than 8A*

Vehicle Adapter

- EVA1275 External Vehicle Adaptor
  - DC Input Range: 12 ~ 32 V
  - DC Output Voltage: 19 V
  - Output Current: 5 A (at 28 V Input Voltage)
  - Ripple Voltage: 200 mA
  - Input Reverse Voltage Protection
  - Output Overvoltage Protection
  - Short-Circuit Protection and Current Limit
  - Complying with MIL-461F
  - Complying with MIL-1275D

- EVA19040 External Vehicle Adaptor
  - DC Input Range: 12 ~ 32 V
  - DC Output Voltage: 19 V
  - Output Current: 4 A (at 28 V Input Voltage)
  - Ripple Voltage: 200 mA
  - Output Overvoltage Protection
  - Short-Circuit Protection and Current Limit
  - Complying with MIL-461F

Trust Platform Module (TPM)

There is an optional Trust Platform Module (TPM) equipped with this notebook computer for users to strengthen the security. The TPM module can support to -20ºC environment of operating temperature.

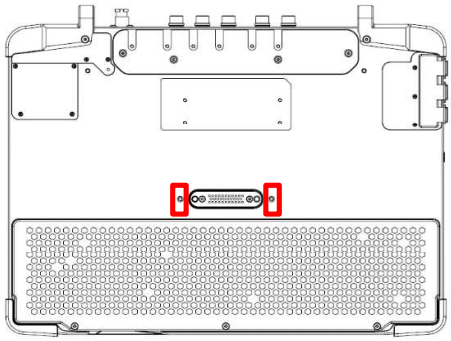
With TPM, users are able to encrypt the folders and files directly and make the important file be more secure and be with an additional protection. In other words, your TPM-encrypted files are basically protected with two layers. Even if your TPM-encrypted files are hacked, the files can not to be read without passwords and TPM chipset.

DockUnder DURS

DockUnder DURS is designed to utilize for system unit docking. AC adapter is able to attach directly to DockUnder. After docking and switching on DURS, the system power will be charged. You can find all necessary drivers in the Utility DVD to make DURS work correctly.

External Ports	Internal Ports
A. Serial Port DB9 x 2 Default: RS232 Optional: RS422, RS485 B. USB 2.0 x 1 C. USB 3.0 x 1 D. VGA x 1 E. MLAN x 1 F. GLAN x 1	A. PCI slot x1 & mini PCIe slot x 1 B. SATAⅡ ODD (Optional) ** ** PCI cards longer than 21 cm will be unavailable if adopting B.

To enhance EMC performance, users can fix two spare screws(provided in DURS package) beside the D/U port as shown in the figure. Besides, the screws are unnecessary for structure or other functions.



Chapter Eight - Maintenance and Service

Cleaning

ALWAYS turn OFF the power, unplug the power cord and remove the battery before cleaning.

The exterior of the system and display may be wiped with a clean, soft, and lint-free cloth. If there is difficulty removing dirt, apply non-ammonia, non-alcohol based glass cleaner to the cloth and wipe.

An air gun is recommended for cleaning water and dust. For salty water please clean with fresh water then blow-dry with an air gun. Be sure not to turn the computer upside down while there is water being applied.

Troubleshooting

Should the computer fail to function properly, the troubleshooting steps below may be followed.

- Check AC/vehicle adapter, battery, and the power source.
- Minimize the configuration, i.e. remove extra peripherals and devices.
- Remove the modules one by one (HDD, ODD, Battery, etc.).
- Remove the software suspected.
- Set BIOS fail-safe default.
- Re-install operating system and application software.